

NASA TECH BRIEF

Manned Spacecraft Center



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Nonflammable Potting, Encapsulating and/or Conformal Coating Compound

A polymer material formed from dimethylpolysiloxane, ammonium phosphate, and ground glass, provides a nonflammable potting, encapsulating, or conformal coating compound. It is nonflammable in an air environment and self-extinguishing in an atmosphere of 60 percent oxygen and 40 percent nitrogen. The table gives the formulation of the material.

Ingredient	Percentage by Weight
Dimethylpolysiloxane Resin	42.56%
Ammonium Phosphate, Monobasic	31.91%
Glass, 325 Mesh	21.28%
Dimethylpolysiloxane Curing Agent	4.25%

The ammonium phosphate appears to inhibit or retard combustion by interfering with the free radical chain reactions. In addition, gas emitted by the hot ammonium phosphate causes intumescence of the dimethylpolysiloxane and creates an insulating gaseous layer. The glass, which melts at low temperatures, reduces the rate of heat transfer within the material.

This material may have applications for reducing industrial fire hazards. Also, results of preliminary dielectric property measurements indicate a potential use in electrical component encapsulation.

This material should interest the aircraft industry, machinery manufacturers, the automotive industry, and manufacturers of encapsulating, potting, and conformal coating polymers.

Note:

Requests for further information may be directed to:
Technology Utilization Officer
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Reference: TSP72-10337

Patent status:

No patent action is contemplated by NASA.

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